



# CATS

# NEWSLETTER

**The Official Journal of the Capital Area Timex/Sinclair Users Group**

## **Presidential Ramblings**

November's meeting provided a change of pace from our normal Sinclair related program. If the weather caused you to stay at home, you missed an interesting presentation from Mr. Dudley of the Goddard Space Center; but Hank will be writing about the program elsewhere in this issue, so I'll say no more.

A smaller group than usual braved the rain and enjoyed the extra opportunity to exchange problems and solutions during the Workshop period earlier in the day. I was once again the lone pupil in the QL Beginner's Tutorial so I benefitted from advice from Mannie, Akin, Stan and Tom R. Even though at times the helpful hint received via my left ear contradicted the hint being received from the right ear, I definitely appreciated their patient concern as I slowly gained confidence in the beginning stages of learning my way around Abacus.

Since I'm now quite confident in using Quill perhaps I can help some of you by passing on a few hints I was taught earlier. Do you speed up your letter writing by making up a file called (something like) Dummy which contains all the margins, justification decisions, your address, etc. which you use frequently for correspondence? Do you know that by electing None with the Footer command you do away with the page number when you're writing just a short letter? (If you do this be sure to press Enter after you complete your text or the last line will not print. This is particularly important if your last line is your name.) And one last -

## **New Meeting Dates**

These are the new meeting dates and times for the next year. Please note that they are not the second Saturday of the month! Mark them on your calender now (or when you get a 1991 calendar)! For meeting places other than the New Carrollton Library, we will be putting maps and directions in the newsletters for that month.

January 5	- 11:00 - 4:30
February 9	- 2:30 - 5:00
March 2	- 11:00 - 4:30
April 13	- 11:00 - 4:30
Hyattsville Library!!!	
May 4	- 11:00 - 4:30
June 8	- 11:00 - 4:30
July 6	- 11:00 - 4:30
August 10	- 11:00 - 4:30
September 14	- 11:00 - 4:30
Hyattsville Library!!!	
October 12	- 11:00 - 4:30
November 2	- 11:00 - 4:30
December 7	- 11:00 - 4:30

Meetings will start at 2:00 (except in Feb. when it will start at 2:30). Anything before 2:00 will be the workshop. Executive Meetings will be at 1:00 (we'll try to work it in in Feb.).

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## Key Dates

8 December: CATS Meeting  
11:00 Workshop  
1:00 Executive Board Meeting  
2:00 General Meeting

22 December: Newsletter Deadline  
For the Next Issue

### From Page 1

if you want to make changes in your printer driver you have to lrun Install Bas immediately after power up. If you try to do this by simply Quitting Quill and returning to Super Basic, you get a "bad parameter" error message. No doubt most of you will be thinking "I knew all that", but it might be that just one of you learned something new. If so, I figure that this is what User Group sharing is all about!

Along these lines how about sending your questions to us so we can start a regular Newsletter column? I'm directing this to the several new Out of Town subscribers we've received in the last several months and who might profit from the advice of our many long time members. Whether your question pertains to the TS 1000, 1500, 2068, the QL or the 288 we have members who are conversant with their various ideosyncrasies; so why not give us a try?

By writing to our P.O. Box our Corresponding Secretary, Joe Miller, will pass on your question to a member who can write a response. Send a SASE for a personal one, otherwise you'll eventually see it in a Newsletter. I'm sure Tim will print those questions and answers likely to be of interest to more than to the original questioner. [I'm hurting for articles, so I'll print anything :-)] - ED]

A reminder that starting with January, 1991, be sure to check your NL carefully for both time and place of our monthly meetings. An unfortunate lack of internal communication resulted in our late request for room reservations, but Joe has worked long and hard to evolve a satisfactory schedule. Who knows, maybe an occasional change of date and place will enhance (rather than detract from) our attendance! And while on that subject, the possibility of an occasional (probably interim) meeting in the Baltimore area has been broached. If this appeals,

give Duane Parker a call on 301/285-2799.

Lastly, does anyone have a copy of Clare Spottiswoode's "QL ABACUS" to sell me?

"Nuff,

RUTH

## **From The Editor:**

Welcome to another issue of the Newsletter, as small as it may be. The reason for the last couple of newsletters being a bit on the thin side, is a lack of articles. Over the last couple of months I have seen the number of articles submitted for publication slowly dwindle. Usually I have to find something to fill the space, including writing more articles myself.

Come now, you people must be tired of my dribblings and my "Techno Geek" view point. We really need more people to write articles! Using an allegory stolen from Tom Lehrer and slightly altered - User groups are like a sewer; what you get out of them depends on what you put into them!

This means Participate. Participate in everything. Participate in the meetings and participate (and this is the most important one) in the Newsletter.

This month we do have some important information for our members. Please read about the change in meeting dates and the agenda of those meetings. We also have a short article dealing with the new advertising rates. So advertisers, please note!

Well, on to other matters. I plan on using a little "do-hicky" used on the Internet in the forthcoming newsletters. It is called the "smiley face." It is a :-). Since e-mail, and any text, is devoid of expression, it's hard to tell when some one is pulling your leg or just being facetious. It's my way of letting you know

that it's a joke or to be taken as tongue in cheek. (If you turn the page on it's side, you'll see what I'm talking about)

For those that don't know, Vulcan's Computer Monthly is running a Sinclair Column written by Bill Ferrebee of Parkersburg, WV. Take a look at it. It's well worth the \$1.95 for the magazine.

As if I don't have enough to do already, I am starting a new newsletter for the QL. It will be called the "QL Hacker's Journal." It will support all QL programmers and all languages. I'm not talking about the QL user that writes a few programs, now and again. I'm talking about a real programmer that just happens to use the QL at home. Readers should be roughly familiar with Unix and/or MS-DOS, because we may be porting some programs from these OS's.

If you are seriously interested in programming on the QL, drop me a line and I'll add you to the mailing list. I have yet to work out the subscription rate. The first issue will be free. I do not plan to publish the newsletter on a regular basis, but more on how much material I have (and how busy I am on other things, like work, house, and this newsletter).

For those that don't have it, my address is:

Tim Swenson  
4703 W. Braddock Rd. #104  
Alexandria, VA 22311  
tswenson@se3c763a.gnen.osd.mil

## **Next Workshop**

*By Duane Parker*

In December we again plan a workshop session (sorry, but November's Workshop Notice got lost). Bring in your ideas and hardware and software at 11:15 AM. We plan to work on the following projects.

1. Development of a disk, or microdirve, cataloging system has now reached the point where the

program will automatically recover disk names, file names, and information from the file itself and write the data into a file suitable for generating an Archive database. It works - if you do it all right. Since it captures a lot of data, the process can be lengthy - I cataloged 61 disks, to generate 2667 Archive records (over 500,000 bytes), all with only minimal keyboard entry. Herb Schaaf has provided some important improvements, and a modified strategy. Come and give us your ideas. Last month we had version 8 (or "K" - Herb Schaaf's). I hope that we will have a combined version for December.

2. Need help with your hardware? Bring it in. We'll give you all the advice that we can. Recent projects on the QL power supply modification can be continued (see October's N/L). For Barry Washington's QL-autobooter we have circuit diagrams and parts list - come and get them.

3. Several members asked for help with making monitor cables for the QL. Members who offered help, please bring in your tools and knowledge. Those needing to make RGB cables, bring in an 8-pin DIN plug (preferably wired to a cable - see Concepts section of the QL Manual, p. 33.), a hex inverter chip, and the connector for the monitor (Skip's specials take a small sized Molex connector - check your monitor for number of pins.

4. We can still try out some networking ideas. I have some code written to try networking without the Toolkit! So let's bring our QL's and cables and try this out!

Any other ideas? Bring them in. Set-up early so we can have fun

## Meeting Agenda

DECEMBER WORKSHOP 11:00  
THE STARTING GATE - 12 NOON  
Christmas Gift Exchange  
Games in the CATS QL Library  
(Disks to be distributed)

JANUARY WORKSHOP 11:00  
Install Bas Workshop - 12 NOON  
TS 1000-Topics  
Cliff Watson/Ted Osheroff

FEBRUARY WORKSHOP 11:00  
ABACUS - Akin

MARCH WORKSHOP 11:00  
THE STARTING GATE - 12 NOON  
ARCHIVE I (Introduction)  
Mark Fisher

APRIL WORKSHOP 11:00  
THE STARTING GATE - 12 NOON  
SPEAKING IN TONGUES  
A Round Robin of Forth, Lisp,  
and C  
Lisp - Hank Dickson  
C - Tim Swenson  
Forth - Duane Parker/ Herb  
Schaaf

MAY WORKSHOP 11:00  
ARCHIVE II (Intermediate) - Tom  
Robbins

JUNE WORKSHOP 11:00  
THE STARTING GATE - 12 NOON  
PROGRAM TRANSFERS AND CONVERSIONS  
(tentative)  
2068 to QL  
1000 to 2068  
MSDOS to QL

JULY WORKSHOP 11:00  
THE STARTING GATE - 12 NOON  
EASEL  
Mannie Quintero

AUGUST  
ARCHIVE III  
(real world applications)

## New Ad Rates

In hopes of attracting more advertisers to the CATS Newsletter, the Executive Board has voted to lower our advertising rates to be equal with other Newsletters.

Ruth randomly picked a newsletter and it's advertising rates. Using that as our guide, the newsletter advertising rates are as follows:

1/2 Page ad for 6 months - \$10

Smaller ads for smaller runs, will be calculated from this rate. Please send all ads to our mail box address. Please put a comment on the front that identifies the contents as advertising.

If you are pressed for time to get the ad out, please call out Contact Person and Editor, Tim Swenson (703 -820-6657) and he will assist you in making the arrangements.

## "Devouring Fungus"

*A book review by Tim Swenson*

I saw a posting on Usenet about a new book, oddly called "The Devouring Fungus" by Karla Jennings. The poster described the book as containing interesting and amusing stories about computers.

Always looking out for a new computer book, I rushed out to buy the book. After a few calls I found out that the book was not available yet. Fortunately, I found a copy of the book while doing my Christmas shopping.

The book can be found under the Humor section. Once you see the cover, you'll see why. It has an interesting and colorfull cover. I leave it to you to find out.

Once you get past the cover, you find the book to be as advertised. It does start off with the origins of computers and the stories related to it. For those that have had a introduction course to computers, you will find nothing too new. But to the average user, it should all be new and interesting.

The book seems to move in a chronilogical order with it's stories. I have yet to finish the book (hey, I just got it 3 days ago) so I can not speak for the entirety of the book.

The book is aimed at the average person not too familiar with computers. It explains things as it goes. For someone at my level, I have to plow through the "old"

Continued on Page 6

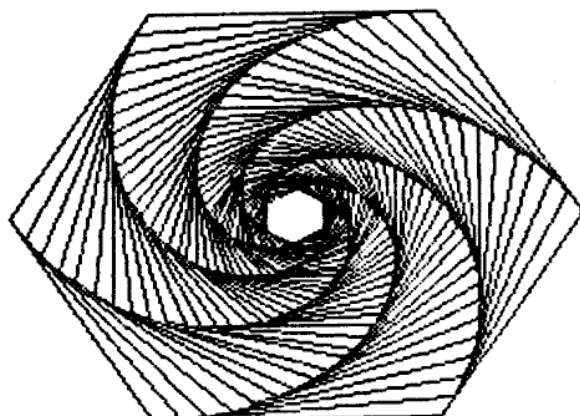
## Spiral

*By Dick Wagner*

Here is a program that generates a nice spiral on the screen. To get a good symetrical screen dump use the Stan Lemke's PRINTER program in the Jan. 1989 issue of UP DATE magazine (our library has a copy if you don't subscribe). It won't be exactly symetrical because the formulas do not produce an exactly symetrical shape but it is close. The COPY command will give a squashed image. By adjusting the formulas it may be possible to reduce the width by the amount the printed image is off.

From Sept 1989 Plotter

```
15 CLS
20 LET c=COS (PI/3)
30 LET s=SIN (PI/3)
40 LET c1=COS (PI/36)
50 LET s1=SIN (PI/36)
60 LET sf=.95
70 LET x=95
80 LET y=0
90 LET cx=130
100 LET cy=88
110 LET sc=1.16
120 FOR j=1 TO 43
130 FOR i=0 TO 6
140 LET sx=x*sc+cx
150 LET sy=cy+y
160 IF i=0 THEN GO TO 190
170 PLOT sx1,sy1
180 DRAW (sx-sx1),(sy-sy1)
190 LET sx1=sx: LET sy1=sy
200 LET xn=x*c-y*s
210 LET y=x*s+y*c
220 LET x=xn
230 NEXT i
240 LET xn=sf*(x*c1-y*s1)
250 LET y=sf*(x*s1+y*c1)
260 LET x=xn
270 NEXT j
280 STOP
290 SAVE "SPIRAL"
```



From Page 5

stuff and get to the "new" stuff. For most of you, this should not be a problem.

In the end, I can recommend the book. Basically, It's fun to read, and I hate to reach the end.

## COMPUTERS AT GSFC

By Hank Dickson

CATS was fortunate indeed to have **Mr. Carroll G. Dudley**--from NASA's Goddard Space Flight Center in Greenbelt--agree to be guest speaker at our November meeting. His theme was: **"Big and Small Computers at Goddard"**.

Before the meeting, Carroll confided that sometime ago he acquired a TS-1000 system at a yard sale, attracted as he was by its historic significance. We should therefore already consider him a member of the Sinclair family!

At Goddard, Carroll worked originally on designing, building and running the land-based telemetry stations which NASA placed in various countries around the world. This was before there were satellites to do such work.

For the past ten years he has worked on the Hubble Space Telescope (HST) as part of Mission Operations. Computers big and small are used by Goddard to monitor the 5000 parameters that guide the operation of the HST. (All 5000 parameters, incidentally, appear to be continually critical!)

IBM PC A/T's are often used for imaging at GSFC, despite their lack of speed (by today's standards).

The control rooms are generally loaded with a mix of older and newer mini-computers. The newer ones are getting smaller and faster and continually blurring the line where the mini's are supposed to end and the main-frames are supposed to take over.

The accompanying chart describes the range of computing power now harnessed by GSFC.

## Preview of Newsletters

By Joe Miller

What's new in Sinclive Land:

CATS exchanges newsletters with several groups in the U.S. and Canada. Every month these newsletters are available during the meeting. Take the time to look over the newsletters. All have good articles about the family of Timex-Sinclive computers. One is free to remove articles from the newsletters and make copies, but please return the newsletters to their proper binders.

Now for a preview of articles:

New England Sinclive-QL Users Group:

Sept-Oct Issue

The in's and out's of ordering from overseas by Dick Tayler. This is a MUST reading for anyone placing an order from over there.

Nov-Dec Issue

A short program for using the QL to access a remote computer written by Mike Jonas. Also an article by Will Horton on QDOS and floating point numbers.

Sinc-Link

July-Aug

This newsletter contains articles about all the Sinclive family of computers. It is packed with well written and easy to understand articles and projects. If one has the LKdos Interface for the 2068, this is the information center for you. This issue has an article about filenames that is new to me. The article is written by Howard Class. George Chambers has written a file header reader for the LKdos 2068.

May-June

Larry Kenny writes to 2068 users about his up and soon to be released Spell Checker and Desk Top Publisher for the 2068. Bob

Continued on Page 8

**Announcing the Inaugural**  
**CATS Sinclair Games Festival**

**Saturday, December 8, 1990**  
**2 p.m. onwards**  
**New Carrollton Branch Library**  
**7414 Riverdale Road (hwy. 410)**  
**New Carrollton, Maryland**

**Plan to: COME and . . .**

**BRING your Sinclair Computer:**

**{ZX-80, ZX-81, TS-1000, TS-1500, TS-2068, QL, or Z88}**

**BRING your best MONITOR**

**BRING your tape player**

**BRING your favorite GAME SOFTWARE**

**SHOW the WORLD how your game works!**

**SEE impressive graphics demo's**

**WIN PRIZES (finest of the 'FEST, etc.)**

**TAKE HOME a souvenir diskette containing the best**  
**of the public domain games for the QL!**  
**(Compiled by our own TOM ROBBINS)**

**For any questions, call Tim Swenson at 703/820-6657.**

**All this will honor the festive holiday season,**  
**rich with refreshments (including Programmer's Punch**  
**Don't hesitate to bring your own culinary creation to the**

**CATS COOKIE TABLE!!**

*And most of all, don't let anything interfere with your coming*  
*to this inaugural holiday event!*  
*Make plans NOW to be there!!*

*Saturday, December 8, 1990, 2 p.m., New Carrollton Branch Library.*

Mithell has a beginner's article on bank switching. Also, Hugh Howie's article under the heading QLIPS, with footnotes on TK2\_ and Networking.

## Little Languages

By Tim Swenson

In his book "More Programming Pearls", Jon Bentley discusses the idea of little languages. The world of computers is filled with languages of various sorts, some large, some small. Most of us think of the large languages like Basic, C, and Pascal, when we hear the word language. But there are a number of little languages out there that are built for a few specific tasks.

Mr. Bentley describes one language called Pic. It is a graphic language available for Unix systems. It looks like this:

```
ellipse "Source" "Code"
arrow
box "Compiler"
arrow
ellipse "Object" "Code"
```

This program will draw a diagram showing how a compiler looks. The line "box "Compiler"" will draw a box and put the word Compiler in the middle.

What I found most interesting is that the compiler used for the language does not output an executable program that then generates output to a printer. The "compiler" for Pic is really a translator. It translates Pic code into Troff statements. Troff is a Unix utility used for formatting documents. It also has crude graphic capabilities.

Pic takes a simple one line statement "box" and generates a number of complex Troff statements. The developer of Pic did not have to worry about the various types of output devices that the program should generate code for, nor did

he have to know any assembly language. All he had to do was write a program that converted Pic to Troff.

This even comes more interesting when a person writing a chemistry text book complained to the developer of Pic that it was hard to draw chemical drawings (Benzene rings, double bonds, back bonds). The developer decided to create a new "little" language that would take input more in line with what a chemist would need, and have it's "compiler" generate Pic source code. This new language was simply called Chem.

Now the chemist could write code in Chem, run the Chem "compiler", run the Pic "compiler", and finally run the Troff program to generate the needed drawings.

One language was used to build another. Each new language need not have a compiler that generates machine code, but could have a translator that generated code to another language.

This idea can be usefull in the QL world, since most of us do not know 68008 assembly code, nor really want to learn. We can create our own new languages, or use existing ones, and translate them to SuperBasic and let the SuperBasic interpreter do the work for us.

Remember that a compiler is a translator that converts source code to machine code. So to build our translators we must create the same parts that a compiler has. This is where books on compilers come in handy.

To demonstrate this, I am going to write a translator that takes LOGO source code and translates it to SuperBasic. I don't intend to support the full LOGO language, I'll support a supset of LOGO. After all, this is only for demonstration purposes.

In forth coming newsletters I'll be detailing my definition of "little LOGO" and the program that



translates it to SuperBasic. I'll take the project in small chunks. I'll break it up into a lexical analyser, syntactical analyser, and code generator. I'll discuss each part as I present the code. See next month.

## Computer Stories

*By Tim Swenson*

These are a number of humorous computer stories that I came across a few months ago. You might find them interesting. I have typed them exactly as I recieved them.

-----  
A friend was having a problem with a sticky keyboard for his Mac. He was talking to another friend, who off-handedly suggested putting it into the dishwasher to clean it up. So, my friend did just that! Needless to say, the keyboard didn't function any too well after that.

-----  
We had an IBM cluster controller controlling some 3270 terminals. We paid \$5,000 for an upgrade that would allow more users to be connected to the controller. The IBM service rep came in and REMOVED a board, that was put ther to deliberately slow things down.

-----  
A computer kept crashing, and every time service was called, it worked fine. It turned out that one of the users would come in, sit down at the console and put his papers and stuff on the top covering the cooling vents. When it crashed, he'd pick up this stuff and leave, removing the evidence. Service people didn't figure this one out until they decided to watch him work to see why it crashed.

-----  
Years ago while working on a large Amdahl 470/6 running DOS & MVS under VM, the system crashed, but gave a system error code xxxxxxxx. Upon looking it up in the

system manual (not an Amdahl manual) it said:

A SYSTEM ERROR HAS OCCURED WHICH WAS PREVIOUSLY THOUGHT TO BE IMPOSSIBLE.

## Vector Characters

*By Tim Swenson*

There are basically two ways of drawing characters on a computer, pixel-based and vector-based.

Pixel-based is what most computers use. The characters are stored in a binary bit pattern cooresponding to On and Off pixels. The left character in the diagram is a pixel-based character. A pixel-based system is the easiest system to use with a raster-scan display. A raster-scan display scans the screen from left to right, from top to bottom. As it comes across a pixel it checks with the computer to see if that pixel is on or off.

A vector-based system stores a character as the endpoints of the lines that create the character. The right hand figure in the diagram is a vector-based character. A vector-based monitor uses these points to draw the lines needed for the charater and only those lines. The monitor scans only the part of the screen that has characters. This makes for a more efficient display.

Since most monitors are raster-scan, we can not use this advantage between a vector- and pixel-based system. There is one advantage we can use.

When a pixel-based character is enlarged it keeps its blocky shape. The larger it is, the blockier it looks. With a vector-based character, as it is enlarged it keeps the general shape of the character. The only problem that comes up is that the character may look a bit skinny with just a single width line defining it. This problem can be dealt with easily.

As an example of this advantage, I wrote a short demo program for the QL. The program can be converted onto any computer with ease.

The program takes a string and prints it out in vector-based characters. For this demo I only made the program recognize three characters A, R, and T.

For each character in the string, the program restores to the line holding the data for the character. The first data item read is the number of points in the character. The more complex a character is the greater the number of points defining it.

The program then starts reading the points and drawing lines between them. If the program reads a data point of 99, 99 it knows not to draw a line between the last point and the current point, much like lifting a pencil off of the paper to move to a new spot.

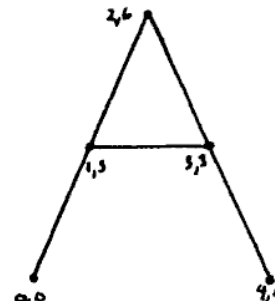
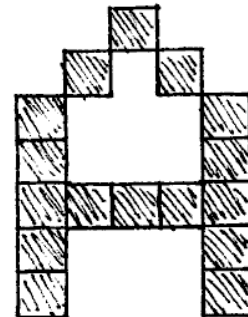
The variables OX and OY are the offsets the tells the program where to start the first character and each character thereafter. Otherwise we would get characters drawn on top of each other.

To see the advantage of a vector-based system, change the SCALE to a smaller number and the letters will be enlarged. You could also multiply the points by a constant. By multiplying by a constant, the user can enlarge, shrink, expand, and compress the letters. No matter how much you expand the letter, the shape is still there. It does not become blocky and unreadable.

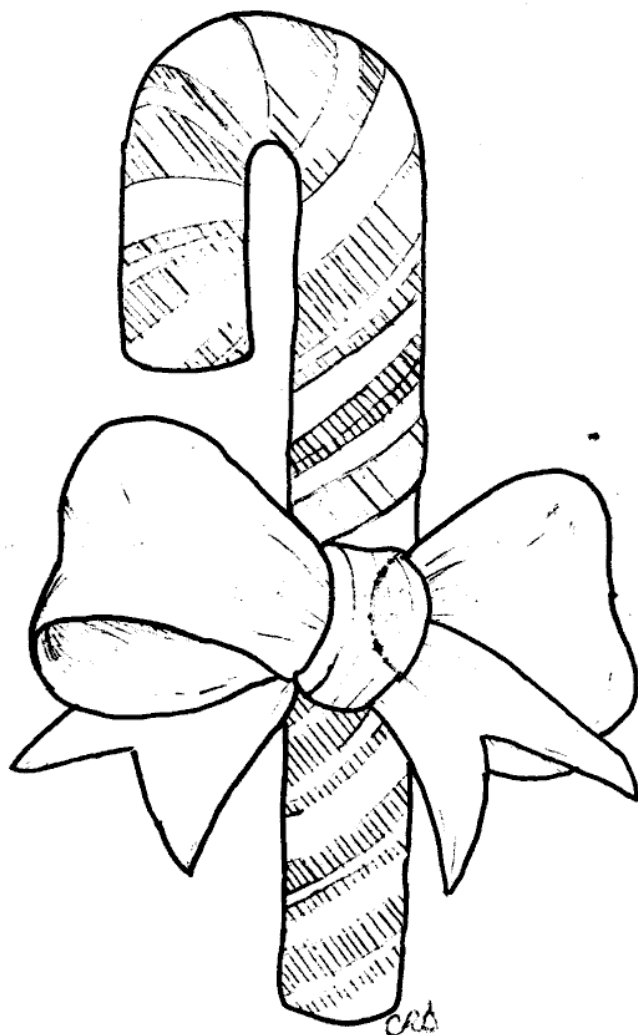
With a little effort this demo program can be expanded to cover the entire alphabet. It can also do other alphabets easily. It can be used in a wide variety of applications.

```
100 CLS #0
110 SCALE 50,0,0
120 CLS
```

```
130 INPUT #0,"Enter a string:
";a$
140 LET ox=1 : LET oy=20
150 FOR z=1 TO LEN(a$)
160 IF a$(z)="A" OR a$(z)="a"
THEN RESTORE 320
170 IF a$(z)="R" OR a$(z)="r"
THEN RESTORE 330
180 IF a$(z)="T" OR a$(z)="t"
THEN RESTORE 340
190 LET ox=ox+6
200 READ num
210 LET count=0
220 READ x1,y1
230 LET count=count+1
240 POINT ox+x1,oy+y1
250 READ x,y
260 LET count=count+1
270 IF x=99 OR y=99 THEN GO TO
220
280 LINE ox+x1,oy+y1 TO
ox+x,y
290 LET x1=x: LET y1=y
300 IF count<>num THEN GO TO 250
310 END FOR z
320 DATA 6,0,0,2,6,4,0,99,99,1
,3,3,3
330 DATA 8,0,0,0,6,1,6,3,5,3,4,1
,3,0,3,3,0
340 DATA 5,0,6,4,6,99,99,2,0,2,6
340 DATA 5,0,6,4,6,99,99,2,0,2,6
```



Have A  
Merry  
Christmas



And A Happy  
New Year

## For Sale

2 QL's 2 T/S 2068's

1 Wafadrive + Interface

1 5 1/4 DSDD Drive  
+ Power Supply

Assorted QL, 2068,  
Spectrum Software

Wishing to sell in as a whole

All for \$400

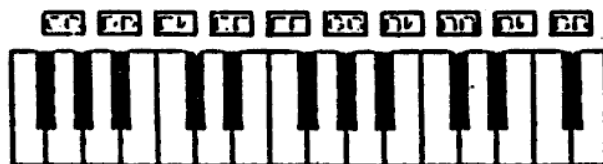
Charlie Smith (301) 972-5205

MUSIC DESIGN '2000'

FROM

AAADH

SOFTWARE



HERE IT IS!!

A REAL MUSIC PROGRAM FOR THE 2068!

You can adjust the volume, tempo and duration of the beat and melody. You can record as you play and play it back later. You can string several tunes together and play them back continuously. You can save the program with the tunes you have written or entered. Room for over 1000 notes and pauses. Over 2 1/2 octaves! 10 chord keys! If you want, you can use your own music books to enter songs of your choice.

Almost like having your own synthesizer on your 2068!  
Nothing better for the price!

ONLY \$19.95+12 SH.

EXCLUSIVELY FROM:  
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OREGON CITY, OR 97045  
503/655-7484

CATS maintains a gratis exchange of newsletters with approximately 30 Users Groups across the U.S. and Canada. Groups not sending a newsletter to us for six months are automatically taken off the list.

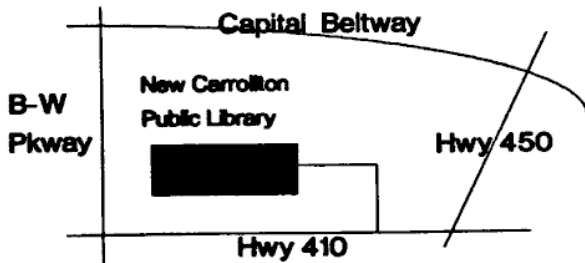
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Ruth Fegley  
**1st Vice President**  
Hank Dickson  
**2nd Vice President**  
Tom Robbins  
**Recording Secretary**  
Audrey Currutt  
**Corresponding Secretary**  
Joe Miller  
**Treasurer**  
Barty Washington  
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Cliff Watson  
**Immediate Past President**  
Bill Barnhart  
**Newsletter Editor & contact person**  
Tim Swenson  
(703) 820-6657

**The Capital Area Timex/Sinclair • Users Group** is a not-for-profit group devoted to serving the interests of those who own, use, or are interested in the Timex/Sinclair family of computers.  
**Executive Board**

**Meetings**  
Monthly meetings are held from 11:00 AM to 4:30 PM, on the second Saturday of each month, at the New Carrollton Public Library.  
**Newsletter**  
Memberships cost \$15 per year, are good for 12 months, and include all privileges (access to libraries, group buys, etc.). A newsletter only subscription is available for persons living outside the Washington Metro area and is \$12 per year.  
**Networks**  
Timex SIG on CompuServe: Wednesday night, 10:00 PM Eastern time (GO CLUB).  
CATS BBS: (301) 588-0579. 8-N-1. 300/1200 baud. News and general information, 24 hours a day.

CATS Newsletter  
P.O. Box 11017  
Takoma Park, MD 20913

**FIRST CLASS MAIL**



The next meeting of CATS will be held on: December 8, 1990  
11:00 AM Hardware Workshop  
2:00 PM General Meeting

At: New Carrollton Public Library 7414 Riverdale Road (Hwy 410), New Carrollton, MD

**IF YOU ARE NOT A MEMBER OF CATS. THIS IS THE ONLY ISSUE YOU WILL RECEIVE**